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July 25, 2003

27-24244.005

BROWN AND CALDWELL

Mr. Anthony Lobred
US Army Corps of Engineers
4155 Clay Street, Room 129
Vicksburg, MS 39183-3435

RE: Proposed Groundwater Interim Measures
Phase I Cultural Resources Management/Archaeological Survey
Grenada Manufacturing Site, Grenada, Mississippi

Dear Mr. Lobred:

As requested, enclosed for your review and use are ten copies of the Phase I Cultural Resources Management Survey for the Grenada Manufacturing facility site in Grenada, Mississippi. This report was prepared in response to the request from the Mississippi Department of Archives and History, through your office, and relates to the proposed groundwater interim measures to be performed at the site. A portion of that project will be performed within a designated wetlands area requiring approval from the Corps prior to construction. This is the last task identified by the Corps as requiring to be performed prior to receiving approval for the project.

Please review the enclosed report and pass along comments to me. If you should have any questions or need additional information, please do not hesitate to contact me. Thank you for your assistance with this project.

Sincerely,

BROWN AND CALDWELL

Dale R. Showers, P.E.
Project Manager
Design & Solid Waste

cc: Don Webster, USEPA Region 4
Louis Crawford, MDEQ
John Bozick, ArvinMeritor
Don Williams, Grenada Mfg.
John Devic, Collins & Aikman
Jeff Karp, Swidler Berlin Shereff Friedman

Docket Number 450439

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D. WEBSTER

A PHASE I CULTURAL RESOURCES MANAGEMENT SURVEY OF APPROXIMATELY 18.25 ACRES FOR A PROPOSED GROUNDWATER INTERIM MEASURE AT A WASTEWATER TREATMENT FACILITY (S5, T22N, R5E) IN GRENADA, GRENADA COUNTY, MISSISSIPPI

LEAD AGENCY: US ARMY CORPS OF ENGINEERS

JULY 2003

DuVall & Associates

Archaeological & Historical Services/ Franklin, Tennessee

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Glyn D. DuVall, Principal Investigator

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Lead Agency: US Army Corps of Engineers

July 2003

MANAGEMENT SUMMARY

A Phase I archaeological survey of approximately 18.25 acres (.03 sq mi) was conducted by DuVall & Associates, Inc., at the request of Brown and Caldwell, on behalf of Arvin Meritor and Grenada Manufacturing, the US Army Corps of Engineers (USACOE) and the Mississippi Department of Archives and History (MDAH). The area of potential effects (APE) is located in the community of Memphis Junction approximately 1 mile (1.6 km) north of the City of Grenada. The APE circumscribes a wastewater treatment facility located at 635 Highway 332. It extends between Highway 332 and Riverdale Creek, just south of the ICG Railway.

The purpose of the archaeological survey was to identify, document and evaluate any cultural resources located within the APE. A pedestrian surface inspection was conducted of the entire APE. The survey was supplemented with the excavation of 40 shovel test units. No cultural resources were identified within the APE. The APE is subjected to frequent flooding and standing water was present in most areas at the time of the investigation. In addition, portions of the APE have been subjected to borrowing and filling operations associated with the water treatment facility and railroad construction.

Based on the results of this Phase I survey, it is very unlikely that cultural resources exist within the APE and no further investigations are warranted.

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INTRODUCTION

A Phase I archaeological survey of approximately 18.25 acres (.03 sq mi) was conducted by DuVall & Associates, Inc., at the request of Brown and Caldwell, on behalf of Arvin Meritor and Grenada Manufacturing, the US Army Corps of Engineers (USACOE) and the Mississippi Department of Archives and History (MDAH). The area of potential effects (APE) is located in the community of Memphis Junction approximately 1 mile (1.6 km) north of the City of Grenada (Figure 1). The APE circumscribes a wastewater treatment facility located at 635 Highway 332. It extends between Highway 332 and Riverdale Creek, just south of the ICG Railway.

The purpose of the archaeological survey was: to identify and document any cultural resources located within the APE; to evaluate these for potential eligibility for listing on the National Register of Historic Places (NRHP) pursuant to criteria set forth in 36 CFR 60.4; to assess the effects of the proposed activities on such resources; and to provide recommendations for further archaeological resource management decisions in compliance with section 106 of the National Historic Preservation Act (NHPA).

The project investigation consisted of background research and a complete pedestrian survey supplemented with shovel test unit excavations at regular intervals. Project background research was conducted at MDAH on May 14th 2003. The archaeological field investigations were conducted on May 15th 2003. Glyn D. DuVall served as the project's Principal Investigator and was responsible for background research and the direction of field investigations. Mr. DuVall was assisted in the field by Jodi Johnson, Christopher Turvy, and Christopher Armstrong. The investigation conformed to all state and federal regulations, policies and laws, including the NHPA of 1966 (PL89-665), the Advisory Council's Procedures for the protection of Historic and Cultural Properties (36 CFR 800), the National Environmental Policy Act of 1969 (PL91-190), and Executive Order 11593.

No cultural resources were identified as a result of this survey and no sites were recorded. All project related materials (photographs, notes, maps, etc.) will be permanently stored at the office of DuVall & Associates, Inc., unless otherwise directed by the client. These materials will be available for examination upon request from the proper authorities.

Project Description

Brown and Caldwell is assisting Arvin Meritor and Grenada Manufacturing with the design of a groundwater interim measure at the Grenada Manufacturing site (APE). A portion of the APE lies within previously determined wetlands. In response to a Pre-Construction Notification filed with the USACOE under Nationwide Permit #38, the MDAH requested a cultural resources survey of the APE prior to any construction activities.

The interim measure will include the installation of a permeable reactive barrier (PRB) consisting of a mixture of granular iron and sand. Most of the PRB components will be below grade, however, some net fill will be associated with the project. In order to accommodate the installation of the PRB a work platform is to be constructed. Construction of the work platform will involve filling a portion of the wetlands area. As a result, the USACOE required a Wetlands Mitigation Plan, which was prepared and distributed by Brown and Caldwell. Specific details of the proposed

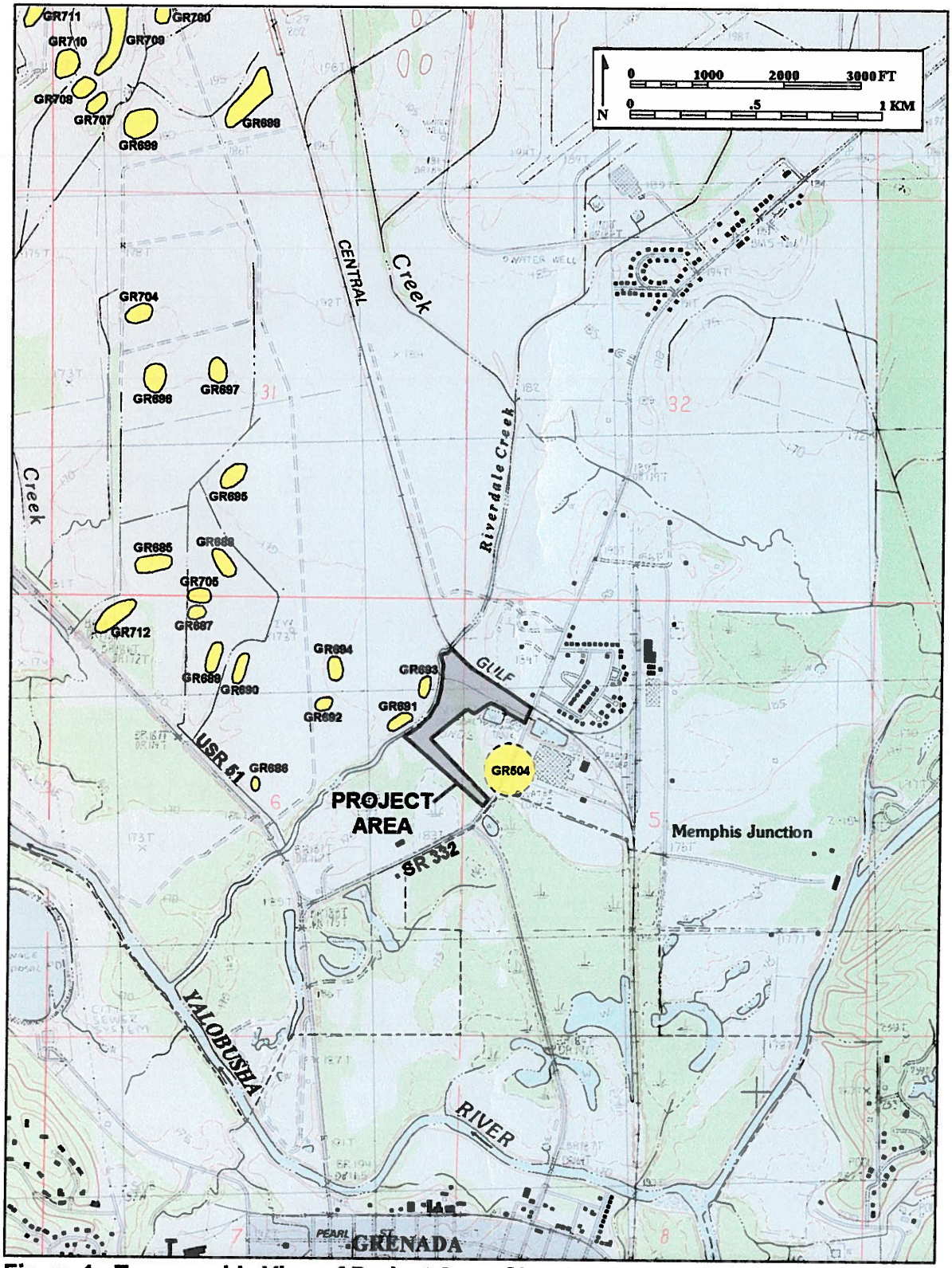

Figure 1. Topographic View of Project Area; Showing Previously Identified Archaeological Sites (adapted from USGS 7.5' Grenada, Miss. Quad, 1983)

construction involving any earthmoving activities were not provided to DuVall and Associates, Inc. It was thus assumed during the cultural resources survey that any cultural remains located within the APE would be destroyed by the proposed construction.

Project Setting

The APE circumscribes a wastewater treatment facility located at 635 Highway 332. It extends between Highway 332 and Riverdale Creek, just south of the ICG Railway (Figure 2). The APE consists of a C-shaped tract comprising approximately 18.25 acres. It is bordered to the northeast by the ICG Railroad and to the southeast by Highway 332. Riverdale Creek runs in a southerly direction along the northwestern perimeter of the project tract and the southern edge of the APE is in pasture/ wetlands (Figure 3).

A water treatment facility is located just south of the northeastern 'arm' of the tract (Figure 4) and a former disposal area (the on-site landfill) extends into the northern portion of the tract. The manufacturing facility is located east of the APE, on the other side of Highway 332. An outfall ditch bisects the northern portion of the project area. The ditch runs generally from east to west and transports waters from the treatment facilities to Riverdale Creek. The ditch appears to be a man-made/altered feature, attested to by some 3 to 4 feet (1 meter) of fill/rubble piled atop the outfall bank (Figure 5). A gravel access road extends from Highway 332 into the northeastern arm of the tract just south of the outfall ditch (Figure 4).

An abandoned, unfinished railroad berm extends north-south across the northern portion of the APE on either side of the outfall ditch (refer to Figures 2 and 6). The berm is elevated some 5 ft (1.5 m) above the ground surface and soil from the surrounding terrain may have been borrowed for its construction.

The APE is relatively level and the majority consists of swampy pasture and/or wetlands (Figure 7). The northeastern portion of the APE, northeast of the outfall ditch, is characterized by mostly dry wooded terrain (Figure 8). Large piles of cleared debris are present within this area. The banks of the outfall and creek are also wooded. Oak, cedar, ash, hackberry, basswood, mimosa, sweet gum, and privet are among the dominant species.

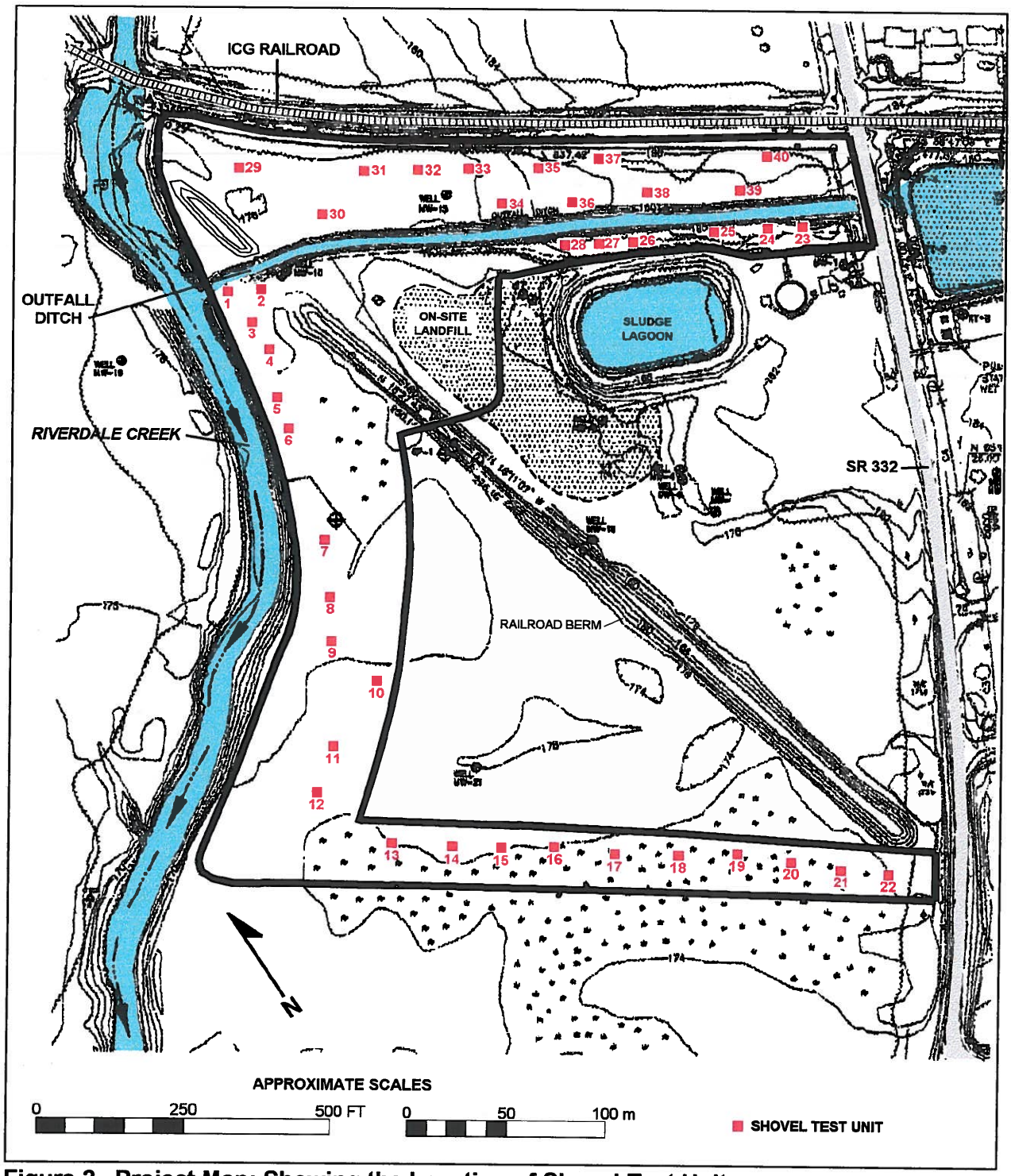

Figure 2. Project Map; Showing the Location of Shovel Test Units

Figure 3. View Southeast along Southern Edge of APE

Figure 4. View Southwest near Northeastern Edge of APE; Showing Water Treatment Facility Adjacent to APE and Access Road within APE

Figure 5. Fill/Rubble atop Bank of Outfall Ditch - View Northwest

Figure 6. Railroad Berm in Northern Portion of APE - View South

Figure 7. View South along Western Edge of APE; ***Riverdale Creek to Right; Note Standing Water in Foreground***

Figure 8. Wooded Northeastern Arm of APE - View North

ENVIRONMENTAL SETTING

Geography

The project area is located in north-central Grenada County (Figure 9). Grenada County occupies an area of approximately 433 square miles (1121 sq. km) in north-central Mississippi (Thomas 1967:1). Grenada County is bordered by Yalobusha County to the north, Tallahatchie County to the northwest, Leflore County to the southwest, Carroll and Montgomery counties to the south, and Calhoun and Webster counties to the east.

Physiography

Grenada County encompasses portions of three physiographic regions that extend across the county from north to south. These are the Mississippi River alluvial plain, the loess/bluff hills, and the north central hills portion of the Coastal Plain (Figure 9).

The westernmost extremity of the county lies within the Mississippi River alluvial plain. This region is nearly level and made up of silty soils formed in alluvium washed from the nearby uplands and loess hills. Slack-water areas contain clayey soils that formed in alluvium of the Mississippi River (Thomas 1967:68).

The loess hills comprised the central portion of the county. The topography of this region ranges from nearly level to very steep hills. The soils are silty and formed in loess that is thought to have been deposited during the ice age when the Mississippi River was much larger than at present. When the glacial river receded, deposited sediments of finely ground rock were blown by the prevailing winds and redeposited along the eastern rim of the valley (Thomas 1967:68).

The project area is located within the eastern portion of the county that lies within the north central hills of the Coastal Plain. The topography in this region is characterized by gently to steeply sloping hills, with narrow, winding ridgetops, that are dissected by numerous small narrow stream valleys. Soils in this region were formed in Coastal Plain sediments that were deposited by seas during the Pliocene epoch. When the seas receded, the Coastal Plain sediments were covered by a loess mantel, which remains on some of the ridgetops. However, subsequent erosion has removed the loess from the slopes (Thomas 1967:68).

The project area is drained by Riverdale Creek which runs from north-northeast to southwest along the western edge of the APE. Riverdale Creek empties into the Yalobusha River 1.4 km (.87 mi) southwest of the project area. The Yalobusha River provides the major drainage for Grenada County. The river runs westward from Grenada Lake in the vicinity of the project area. It then heads southwest, draining into the Tallahatchie River, which in turn flows to the Yazoo River, a tributary to the Mississippi.

Soils

Soils within the project area are part of the Fayala-Collins-Waverly Association. These are well-drained to poorly drained flood plain soils found along streams in the county where they formed in recent alluvium. Fayala soils are somewhat poorly drained soils found on broad, flat bottom lands. Collins soils are moderately well-drained soils found in bands adjacent to stream channels. Waverly soils are poorly drained soils that are found in low areas (Thomas 1967:2).

built over the grave (Dye 1983; Walthall 1980).

The Miller II Phase (A.D. 300 - 500) is a continuum of the Miller I phase in terms of material culture and mortuary practices. For the most part, diagnostic projectile points remain the same throughout the Woodland period. Contracting stemmed Gary points were still common and the Tombigbee Stemmed (A.D. 0-700) type becomes more prevalent (Dye 1983; McGahey 2000). The first arrow points, Madison (A.D. 300 - 700) appear during this time (McGahey 2000:187). Sand tempered Furrs Cordmarked ceramics dominate over Saltillo Fabric Impressed and Baldwin Plain ceramics in the beginning of the period (Dye 1983; Walthall 1980). While grog tempered ceramic types such as Baytown Plain, Mulberry Creek Cordmarked, Withers Fabric Marked, Wheeler Check Stamped, Gainsville Complicated Stamped, and Soloman Brushed are added to the assemblage during the later part of the period. By the end of the Miller II Phase grog tempered wares dominate the ceramic assemblage and both the grog and sand tempered ceramics produced are predominately plain varieties (Dye 1983).

An increase in the number of sites in the Miller II phase indicates an increase in population over that of the Miller I phase. Botanical remains recovered from Miller II deposits indicate that hickory nuts, acorns and walnuts were a substantial subsistence plant foods (Caddell 1979:56). Miller II sites are more concentrated in the Black Prairie Belt. Burials are no longer found within village midden contexts. The construction of burial mounds continues during this phase however the absence of numerous trade and/or burial items suggests that Miller II populations were no longer participating in the Hopewellian Interaction Sphere (Dye 1983).

The Miller Site (22LE62) located on Yonaba Creek at the Tombigbee headwaters in Lee County contains substantial Miller II phase deposits. The site contains numerous shallow pits within the Miller II phase occupation midden. Miller II structures at the site are elliptical, measuring approximately 4.5 meters by 5.4 meters, or rectangular, measuring roughly 5.8 meters by 6.4 meters. Storage and/or refuse pits were commonly located within structures and one structure contained a flexed burial (Jennings 1941).

Burial Mound A at the Miller site was built over a fire-scarred original ground surface resembling those of the Miller I phase. However, there are no cremations in the Miller II phase. Thirty of the 32 burials excavated were situated within the mound fill, only two were in buried within the original ground surface (Walthall 1980). While some interments contained flexed individuals, the majority were extended and grave goods were rare (Jennings 1941).

There is a marked distinction in Miller III (Late Woodland, A.D. 500-1000) phase cultural remains over the previous two Middle Woodland phases. Larger stemmed projectile point types such as Gary are replaced by small triangular Madison, and Hamilton type points during this phase, indicating the widespread use of bow and arrow technology. Micro-tools (small chert flakes used as knives) are also added to the lithic assemblage during this phase (Dye 1983). Grog is the dominate tempering agent and there is a noticeable lack of sand tempered types. At the end of the period (A.D. 1000) shell tempered pottery enters the assemblage as an extreme minority (Dye 1983).

In the initial part of the Miller III phase cord-marked pottery is popular and ceramic assemblages are usually dominated by Mulberry Creek Cordmarked and Baytown Plain wares and the

frequency of grog tempered Baytown Plain and Mulberry Creek Corkmarked increases over sand tempered Furrs Cordmarked. Toward the middle of the phase Baytown Plain dominates and Mulberry Creek Cordmarked, and Withers Fabricmarked are minority types. New grog tempered ceramic types introduced at this time are Gainsville Simple Stamped, Evansville Punctate, Avoyelles Punctate, Soloman Brushed, and Alligator Incised (Jenkins 1979:266-268). Later in the Miller III phase the ceramic assemblage is dominated by Mulberry Creek Cordmarked followed by Baytown Plain and Withers Fabric Marked and Alligator Incised and Gainesville Cob Marked are minorities. By the end of the period plain wares increase and there are equal frequencies of Baytown Plain and Mulberry Creek Cordmarked (Dye 1983).

The Miller III economic base continues to be one of hunting and gathering (Alexander 1983; Walthall 1980) and among the plant foods, there is a heavy reliance on walnuts and acorns (Caddell 1979:56-57) and maize is added to the subsistence base (Dye 1983). The first substantiated evidence for maize horticulture in the Tombigbee Valley is found during this phase (Dye 1983).

An increase in the population is represented by the presence of numerous larger communities. Sites containing Miller III phase occupations include 22CL527 and 22CL528 in Clay County, 22LO654 in Lowndes County, 22MO553 in Monroe County (Blakeman 1975), and 22TS954 and 22TS956 in Tishomingo County (Lafferty and Solis 1981). Miller III houses are small, rectangular, semi-subterranean structures. The construction of burial mounds ceases (Walthall 1980) and burials are arranged in a semi-extended position with individuals lying on their backs or sides with their heads oriented to the east (Dye 1983). By the end of the Late Woodland period population levels were greatly increased and horticulture and non-burial mound ceremonialism became highly developed.

Mississippian Period

The Mississippian period is generally dated between ca. A.D. 900 and 1600, although considerable regional variation is documented for the emergence and culmination of this period (Griffin 1967; Jennings 1974; Peebles 1978; and Phillips 1970). The primary artifacts which are diagnostic of the Mississippian period are a wide variety of utilitarian and non-utilitarian shell tempered ceramics. In hamlets and farmsteads the ceramics were mainly undecorated utilitarian wares including storage vessels such as jars and bottles, cooking pans, and consumptive vessels such as cups and bowls. Although a wide range of nondecorated utilitarian wares were also present in ceremonial centers and villages, vessels were often decorated with symbolic motifs and effigy vessels were common (Kim et al. 1993). Other ceramic artifacts included effigy (smoking) pipes, disks, human effigies (fertility figurines), and animal effigies.

Small triangular projectile points such as Madison and Hamilton are diagnostic of the Mississippian Period (Justice 1987). An array of woodworking tools including adzes, axes, chisels, and wedges/splitters, as well as large spatulate agricultural implements (hoes) are also found on Mississippian sites. Other lithic artifacts occurring during this period include discoidals/gaming stones and carved human and nonhuman effigies.

Subsistence activities were dominated by intensive agricultural pursuits including the cultivation of maize (Zea mays), beans (Phaseolus vulgaris), and squash (Cucurbits sp.). Other cultural characteristics of the period include complex socio/political organization, complex economic

systems, large ceremonial centers, wall-trench houses, and pyramidal, flat-topped mounds (Griffin 1967; Jennings 1974).

A number of different site typologies have been offered, each dealing specifically with regional settlement manifestations. In Tennessee, for example, Jolley (1980) has offered a settlement hierarchy in the Lower Duck and Middle Cumberland river valleys. The typology essentially uses a large-to-small ranking system and includes: (1) civic-ceremonial centers [cities/towns], (2) villages, (3) hamlets, (4) farmsteads, and (5) ephemeral, probably seasonal, procurement and/or other special activity sites. Others have suggested more complex demographic models which must be viewed on a continuum, and as integral facets within the entire spectrum of Mississippian cultural dynamics (see various articles in Mississippian Settlement Patterns, ed. by B. Smith 1978; and various articles in Mississippian Communities and Households, ed. by Rogers and Smith 1995).

Archaeological studies of Mississippian sites and site location indicate that inter-settlement and intra-settlement patterns were often reflective of a discernible hierarchical arrangement. The constitution of these settlement models appears to have been largely determined by the degree of socio/political, religious and economic integration of quasi-local populations (Peebles 1978). Civic-ceremonial centers are characterized by their larger size, flat-topped mounds, and artifacts manufactured from non-local raw materials such as copper, conch shell, steatite, mica and catlinite. The cities are probably the primary residence(s) of socially and politically elite individuals. Villages, hamlets, and farmsteads, which were generally smaller, were scattered about the terrain in assorted directions and distances from the centers, and were usually occupied by individuals of lower, "common" status (Jolley 1980).

Jolley (1980) notes that civic-ceremonial sites in the Lower Duck and Middle Cumberland valleys tend to be located on uplands, adjacent to major drainages. Smaller farmsteads and hamlets are usually scattered along the lower terraces and floodplains. Previous works propose a positive correlation between fertile, high-yield soils and Mississippian site locations. Jolley (1980) suggests that the preponderance of smaller sites located on floodplains and low terraces reflects an emphasis on the use of rich bottomland soils for agricultural purposes. In addition, occupations within riverine environments would have been optimally located for the exploitation of aquatic resources. Jolley (1980) also suggests that any deviation from this pattern, and the tendency for "mound" sites to be located in adjacent uplands, was essentially the need to avoid potential annual flooding.

A similar settlement pattern has been documented for the Mississippian Period in the Black Warrior and Tombigbee Drainages of Central Alabama (Peebles 1978; Steponaitis 1978). Spatial analysis on hierarchically ranked site locations suggests a multi-tiered relationship between site type and resource availability. The smaller sites (special activity, hamlets, farmsteads, and small villages) tend to be located in close proximity to various natural resources, particularly optimal agricultural soils. Conversely, the locations of ceremonial mound "centers" show little geographic correlation with rich farming soils. Moundville, the largest and most complex ceremonial mound site in the Black Warrior River Valley, displays the lowest spatial correlation values for preferred soil types.

Secondary ceremonial mound centers exhibit only slightly higher tendencies for the same variable

(Peebles 1978). Peebles suggests that this site distribution pattern reflects economic, social, and political relationships inherent in a developed chiefdom level of organization. The pattern is essentially dictated by the distribution and areal extent of selected natural resources. The smaller sites represented first line producers in the fulfillment of subsistence requirements, thus their location within the overall settlement hierarchy was largely dictated by micro-environmental constraints. Cities and towns, functioning in an administrative context, were optimally located to convey and/or channel the exchange of goods and services between the elite and common. The most advantageous location(s) of ceremonial sites would be the one(s) which best service the socio-political and religious affairs of the group within the settlement hierarchy.

Smith (1992) suggests that the key to understanding the dynamics of settlement patterns is rooted in the research objective itself: "A typology constructed on the basis of access to natural resources will reveal patterning determined by natural resources. Discrepancies in patterning which cannot be explained by defined resource or environmental factors are indicative of the influence of politically or socially determined variables". Previously constructed regional settlement models have dealt primarily with optimum resource availability (seasonal, annual, or periodic), soil fertility, convenience of transportation, and other physio-environmental determinants. Most of these analyses have neglected socio-cultural factors which are arguably of equal importance and often poorly reflected in the archaeological record.

Few Mississippian sites have been found in the region, reflecting a continuance of the general depopulation that began in the Late Woodland period. These sites are located along the terraces of the large streams in the area. Identified Mississippian components in this area are all located within the boundaries of larger Woodland component sites, suggesting a continuity of site occupation between the Woodland and Mississippian periods (Futato 1989).

Protohistoric Period

The Mississippian social system was in place in some areas at the time of European contact. The Natchez were the only group still exhibiting a Mississippian pattern at the time the French entered the region in the 17th century. It has been suggested that the impact of disease and resulting social disruption resulted in the widespread deterioration of Mississippian populations prior to actual contact.

By 1600 A.D. archaeological evidence indicates that most of the large Mississippian civic-ceremonial centers were either abandoned or substantial declines in population had occurred therein (Jenkins and Krause 1986). The populations of these centers apparently dispersed into smaller villages, hamlets, and farmsteads (Brain 1971, 1978; Morse 1983). Deterioration of the socio-political, religious, and economic systems is signaled by the decline and abandonment of mound centers. The disappearance of former integrating channels and the disintegration of the chiefdom network preceded the earliest European contact in many areas of the southeast (Brain 1971, 1978). The scattered tribal units encountered by the earliest explorers probably bore little resemblance to the highly integrated cultural system characteristic of the Mississippian peoples. Residual cultures such as the Natchez were atypical of the early exploration period and are only marginally reminiscent of former Mississippian Culture (Brain 1971; Neitzel 1965, 1983).

Historic Period

The first European explorers to come into present-day Mississippi were the Spanish. A French

settlement was established in 1701 at Mobile by Sieur de Bienville that traded with aboriginal groups living in the interior of North America (Doster and Weaver 1981). In an effort to expand trade with the Creek Indians, the French established Fort Toulouse at the confluence of the Coosa and Tallapoosa Rivers in 1717. The British allied with the Chickasaw and began to compete with the French trade by the 1730s, disrupting French control of the region. French campaigns against the Chickasaw (in 1736 and 1739) were unsuccessful due to the support of arms provided to the Chickasaw by the British.

At the end of the French and Indian War (or Seven Years War) the French were forced to cede all claims east of the Mississippi River, except for New Orleans. The region remained largely a province of the Choctaw and Chickasaw and British West Florida. Land disputes continued resulting in a series of treaties issued by the British to maintain control of trade with the Indians (Doster and Weaver 1981:39). During the Revolutionary War the Creek, Chickasaw, and Choctaw remained loyal to the British, due to their dependence on English trade. British trade with their Indian allies was broken in 1779 when the Spanish allied with the Americans, capturing British-held Natchez, Mobile, and Pensacola. The aboriginal cultures within the newly formed United States would be greatly affected by 1780s-1790s treaties, road construction (such as the Natchez Trace and Gaines Trace), the Louisiana Purchase in 1803, and the War of 1812. After the onset of the American Revolution, West Florida grew rapidly attracting pioneers of Englishmen and Scottish decent (Starr1976). The Mississippi country was opened to settlement in 1798 when Congress organized the Mississippi territory included present-day Mississippi and Alabama (Lowery 2002). By 1832 the majority of the aboriginal peoples had been removed from northern Mississippi.

During the Early American Period the Choctaw ceded their land under the conditions of the Treaty of Dancing Rabbit Creek signed in 1830. With the cession of the Choctaw a vast tract of land was opened for Euro-American immigrant settlement, under the control of the newly established state of Mississippi. The removal of the native Chickasaw and Choctaw allowed for profound change within the region during the Antebellum period (1814-1861).

By 1817 Mississippi's population qualified the territory for statehood. Mississippi was admitted as a state in December 1817. The population continued to grow rapidly during the 1830s (Otto 1989). By 1832, Mississippi had reached its present geographical proportions, and all Indian populations had been forced west to the Oklahoma Territory.

Settlers who came from Georgia and Carolina introduced methods of clearing hardwoods, as well as new cultivation practices, including short-staple cotton and corn. Cotton turned out to be very lucrative due to the fertile soils of Mississippi and the high prices being paid for cotton in England (Lowery 2002). The first settlers in the project area grew corn, peas, beans, potatoes, and other crops for their own use. In the 1800s cotton was grown extensively and shipped from ports on the Yalobusha River (Thomas 1967:68). As demand grew, cotton was shipped to Mobile and New Orleans via the Tombigbee and the Mississippi, respectively. In the 1830s crops were being shipped beyond the limits of river transport by the railways. By 1840 it was necessary to commercialize river transport to accommodate the larger landholders and expanding markets (Doster and Weaver 1981:61). Within the following decade, changes had to be made to facilitate the production even with the advances in river transport vessels and the addition of two major railways in northern Mississippi. In 1856 road improvement legislation was expanded to include

the improvement of navigable streams.

During the Civil War many small skirmishes and raids upset northern Mississippi. Problems increased following the Union occupation of Memphis in 1862. The Union army was responsible for taking or destroying crops and livestock and for releasing slaves. Railroads, such as the Mississippi & Tennessee and the Mississippi Central Railroads were spoiled as well (Carpenter 1975).

Grenada was the site of a Confederate encampment and served as a stronghold. Defenses extended along the Yalobusha River from Holcomb to Columbus with Grenada serving as a center point. Earthworks were constructed around the city and all along the river in the area (Owens and Thorne 1975; Elliot and Bondurant 1996). When Union troops arrived at the city in November 1862, 22,000 men were reportedly engaged in its defense. Despite their longstanding efforts Confederate occupation of the city ended on August 18, 1863 and no further military activity took place in Grenada (Owens and Thorne 1975).

The ensuing years comprised a period of reconstruction that were characterized by social and political upheaval. Grenada County was created on May 9, 1870 from parts of Yalobusha, Tallahatchie, Carroll, and Choctaw Counties; land formerly part of the territory originally ceded by the Choctaw Indians. That same year, the town of Grenada, whose history goes back as far as the earliest settlement along the Yalobusha River, was named the County seat (Thomas 1967: 67).

Agriculture remained the county's economic stronghold through the beginning of the twentieth century and cotton was the chief cash crop. Cotton producers suffered in the 1920s due to boll weevil infestations and heavy rainfall, the combined effects of the economy and the ensuing depression forced many into bankruptcy (Giles 1973).

The timber industry remained strong and provided local job opportunities up through the 1930s. At that time the state created national parks to protect the dwindling resource, forcing a decline in the timber industry. Despite their efforts, forestry and conservation made little progress until the work of the Civilian Conservation Corps (Mikell and Turley 2000:13).

With the onset of World War II, many agricultural workers joined the military. While Mississippi's economy grew during the war, it remained last in the nation in per capita income. By the end of the war, the focus of Mississippi's economy had shifted from agriculture to industry (Farrell 2002).

Today more than half Grenada County's acreage remains forested. The economy base remains largely agricultural. Farming has become more diversified. Livestock, particularly beef cattle, and feed, soybeans, corn, pasture, and small grain are the typical agriculturally related land uses. Cotton is still the most important cash crop in the county, but its acreage has decreased since an acreage restriction in the 1930s (Thomas 1967:68). Local industries include plants that manufacture hosiery, auto wheel covers, mirrors, and heating and air conditioner units and parts. In addition, there are several cotton gins, a cottonseed oil mill, a wood preserving plant, a hardwood flooring plant, and a meat packing plant (Thomas 1967:67). US Route 51, Interstate 55, State Routes 7, 8, and 35, and the Illinois Central Railroad, connect the county with distant cities for transport (Thomas 1967:68).

ARCHAEOLOGICAL BACKGROUND

Previous cultural resources management investigations have been conducted throughout the vicinity of the project area and a total of 25 sites (22GR504, 22GR685-700, 22GR704-705, 22GR707-712) have been identified (refer to Figure 1 and Table 1). All of the previously recorded sites in the area contain prehistoric components. These are represented by light artifact scatters and the majority (n=20) are of indeterminate age/cultural affiliation. The five prehistoric components that have produced diagnostic artifacts (22GR685-687, 22GR699-700) indicate that the region has been occupied throughout prehistory, as far back as the Late Paleoindian/Early Archaic period. Eleven historic components have also been identified (22GR685-688, 22GR691, 22GR693, 22GR698-699, 22GR705, 22GR707-708), these are represented by artifact scatters and, in one instance, architectural remains. The historic components in the region indicate that the area may have been occupied historically as far back as the latter part of the mid-19th century and securely since the late 19th century.

Only one of the previously identified components has been considered potentially eligible for inclusion in the NRHP. This is the prehistoric component identified at 22GR685 which contained evidence of Late Paleoindian/Early Archaic, Early-Late Archaic, and Middle Woodland period occupations within a 70 cm thick deposit. The remainder of the identified cultural remains exist within shallow, disturbed deposits. Much of this disturbance is likely a result of the regions agricultural/timber harvesting history and associated erosional processes.

A Phase I survey of the Grenada Lake area for the Corps of Engineers was responsible for the identification of Site 22GR504 (Broyles, et al 1982). Phase I investigations of 884 acres for a proposed industrial park, conducted by Richard A. Marshall in February 1987 (87-026) were responsible for the identification of Sites 22GR685-705 (Marshall 1987a). An additional Phase I survey of 104 acres for development by the Mississippi Chemical Corporation conducted by Richard A. Marshall in May 1987 (87-042) resulted in the identification of Sites 22GR707-712 (Marshall 1987b).

Additional cultural resources management studies have been conducted in the area with negative results. These include: a survey of 2 acres in the vicinity of the Grenada Municipal Airport for a water main and gravity sewer (report 87-126; Marshall 1987c); a survey of 21 acres for a proposed runway extension at the Grenada Municipal Airport (report 89-159; Thorne 1989); and a survey of approximately 140 acres for two proposed sewage lagoons on either side of the Yalobusha River, just south of the project area (report 89-273; Johnson 1989).

Table 1. Summary of Archaeological Sites in the Vicinity of the Project Area				
SITE NO.	SITE TYPE	DESCRIPTION	AGE / CULTURAL AFFILIATION	NRHP ELIGIBILITY
22GR504	Prehistoric - Open Habitation	Light artifact scatter	Indeterminate	Unknown
22GR685	Prehistoric - Open Habitation	Dense artifact deposit in excess of 70 cm in depth	Late Paleo/Early Archaic, Early-Late Archaic, Middle Woodland	Eligible
	Historic - Indeterminate	Very light artifact scatter	Post mid-19th century	Not Eligible
22GR686	Prehistoric - Open Habitation	Moderate artifact deposit 10 cm in depth	Late Archaic	Not Eligible
	Historic - Rural Residence	Moderate artifact deposit 10 cm in depth	Late 19th/Early 20th century	Not Eligible
22GR687	Prehistoric - Open Habitation	Very light artifact deposit 20 cm in depth	Late Archaic	Not Eligible
	Historic - Rural Residence	Very light artifact deposit 20 cm in depth	Post mid-19th century	Not Eligible
22GR688	Prehistoric - Open Habitation	Very light artifact scatter	Indeterminate	Not Eligible
	Historic - Rural Residence	Very light artifact scatter	Post mid-19th century	Not Eligible
22GR689	Prehistoric - Open Habitation	Light artifact scatter	Indeterminate	Not Eligible
22GR690	Prehistoric - Open Habitation	Very light artifact scatter	Indeterminate	Not Eligible
22GR691	Prehistoric - Open Habitation	Moderate artifact scatter	Indeterminate	Not Eligible
	Historic - Rural Residence	Moderate artifact scatter	Late 19th - 20th century	Not Eligible
22GR692	Prehistoric - Open Habitation	Light artifact scatter	Indeterminate	Not Eligible
22GR693	Prehistoric - Open Habitation	Light artifact scatter	Indeterminate	Not Eligible
	Historic - Rural Residence	Light artifact scatter	Post mid-19th century	Not Eligible
22GR694	Prehistoric - Open Habitation	Very light artifact scatter	Indeterminate	Not Eligible
22GR695	Prehistoric - Open Habitation	Very light artifact scatter	Indeterminate	Not Eligible
22GR696	Prehistoric - Open Habitation	Very light artifact scatter	Indeterminate	Not Eligible
22GR697	Prehistoric - Open Habitation	Very light artifact scatter	Indeterminate	Not Eligible
22GR698	Prehistoric - Open Habitation	Light artifact scatter	Indeterminate	Not Eligible
	Historic - Farm	Dense artifact scatter (razed remains lg residence and outbuildings)	Post mid-19th century	Not Eligible
22GR699	Prehistoric - Open Habitation	Very light artifacts scatter	Mississippian	Not Eligible
	Historic - Rural Residence	Very light artifact scatter	Post mid-19th century	Not Eligible
22GR700	Prehistoric - Open Habitation	Light artifact scatter	Late Woodland	Not Eligible
22GR704	Prehistoric - Open Habitation	Light artifact scatter	Indeterminate	Not Eligible
22GR705	Prehistoric - Open Habitation	Light artifact scatter	Indeterminate	Not Eligible
	Historic - Rural Residence	Light artifact scatter	Post mid-19th century	Not Eligible
22GR707	Prehistoric - Open Habitation	Very light artifact scatter	Indeterminate	Not Eligible
	Historic - Rural Residence	Very light artifact scatter	Post mid-19th century	Not Eligible
22GR708	Prehistoric - Open Habitation	Very light artifact scatter	Indeterminate	Not Eligible
	Historic - Rural Residence	Very light artifact scatter	Post mid-19th century	Not Eligible
22GR709	Prehistoric - Open Habitation	Light artifact scatter	Indeterminate	Not Eligible
22GR710	Prehistoric - Open Habitation	Very light artifact scatter	Indeterminate	Not Eligible
22GR711	Prehistoric - Open Habitation	Very light artifact scatter	Indeterminate	Not Eligible
22GR712	Prehistoric - Open Habitation	Light artifact scatter	Indeterminate	Not Eligible

METHODOLOGY

On May 14th 2003, research was conducted at the MDAH to determine whether any archaeological sites had been previously recorded within, or in the vicinity of, the project APE. Field investigations were conducted on May 15th, 2003. These consisted of a pedestrian surface inspection of the entire APE. The pedestrian survey was supplemented with shovel test excavations. Photographic documentation and notation of landforms, vegetation, disturbances, etc., was maintained throughout the survey.

Shovel test units were excavated to determine the subsurface presence of cultural remains and to examine soil stratigraphy. These units were spaced at regular 15 to 20 meter (49-66 ft) intervals across the entire APE (Figure 10). The location of shovel test excavations were limited in areas due to the presence of standing water across much of the APE. The test units measured 30-35 cm^2 (12-14 in^2) and were excavated to depths within sterile subsoil (Figure 11). Each test unit was assigned a sequential numerical designation and its location was plotted on a project map. The soil stratigraphy exhibited in each test unit profile was measured and recorded as to soil depths, types, textures, contents/inclusions, and color using *Munsell's Soils Color Charts*. Representative shovel tests were documented photographically. All displaced soil was screened through 1/4 in wire mesh to ensure the systematic recovery of any artifacts. No artifacts were observed during the investigation.

Figure 10. Shovel Test Excavations in Progress along Southern Arm of APE - View North

Figure 11. Representative Shovel Test Unit (Shovel Test 3)

RESULTS

Background Research

Background research conducted at the Mississippi Department of Archives and History revealed that no archaeological sites had been previously recorded within the project APE. One site, 22GR504, was recorded in close proximity to the APE. The site is reportedly centered on Highway 332 between the northern and southern arms of the APE. Two additional sites, 22GR691 and 22GR693, are reportedly located adjacent to the APE on the opposite side of Riverdale Creek (refer to Figure 1).

Site 22GR504 was recorded as a prehistoric open habitation of undetermined age/cultural affiliation, represented by a light artifact scatter containing ceramics. No information as to NRHP eligibility was recovered for the site. Site 22GR691 was recorded as moderately dense artifact scatter representing a multicomponent site containing evidence of indeterminate prehistoric occupation(s) and late 19th to 20th century historic occupation. The site was not considered eligible for NRHP inclusion. Site 22GR693 was also recorded as a multicomponent site represented by a light artifact scatter containing evidence of indeterminate prehistoric occupation(s) and historic occupation that may date as far back as the late mid-19th century. The site was not considered eligible for NRHP inclusion.

Pedestrian Survey

Ground surface visibility across the project APE was essentially 0%. No structures, structural remains, artifacts, features, or marked burials were observed. Areas of obvious disturbance noted during the pedestrian survey included the railroad berm, gravel access road, and rubble/fill deposit along the outfall ditch within the northern portion of the APE (refer to *Project Setting*).

Shovel Testing

A total of 40 shovel test units were excavated across the APE. The results of shovel testing are displayed in Table 2. Plowzone soils averaged 26 cm in depth across the APE. In many areas, although surface soils were dry, water was encountered at a depth between 15 and 39 cm below the ground surface (Figure 12).

The entire portion of the northeastern arm of the APE south of the outfall ditch contained disturbed soils (Figure 13) likely associated with the creation of the outfall ditch and construction of the treatment facility, access road, and railroad berm (see Figure 2 and Table 2, Shovel Test numbers 1-2, and 23-28).

No cultural resources were identified through shovel test excavations.

Table 2. Shovel Test Results

ST No.	Lev.	Depth	Soil Description
1	1	0-2 cm	humic zone - dark brown (10YR3/3) sandy loam
	2	2-40+ cm	disturbed - mottled dark yellowish brown and light brownish gray (10YR4/6 and 10YR6/2) sand
2	1	0-3 cm	humic zone - dark brown (10YR3/3) sandy loam
	2	3-6+ cm	disturbed - mottled dark yellowish brown and light brownish gray (10YR4/6 and 10YR6/2) sand
3	1	0-5 cm	humic zone - dark brown (10YR3/3) sandy loam
	2	5-39 cm	dark yellowish brown (10YR4/4) sandy loam
	3	39+ cm	subsoil - light yellowish brown (10YR6/4) silt
4	1	0-7 cm	humic zone - dark brown (10YR3/3) sandy loam
	2	7-37 cm	dark yellowish brown (10YR4/4) sandy loam
	3	37-47+ cm	subsoil - dark yellowish brown (10YR4/6) sandy clay
5	1	0-29 cm	dark yellowish brown (10YR4/4) silt loam
	2	29-39+ cm	subsoil - dark yellowish brown (10YR4/4) silt loam (water table at 29 cm)
6	1	0-18 cm	yellowish brown (10YR5/4) sandy loam
	2	18-38 cm	dark yellowish brown (10YR3/4) sandy clay
	3	38-40+cm	subsoil - dark yellowish brown (10YR3/4) sandy clay (water table at 38 cm)
7	1	0-17 cm	dark yellowish brown (10YR4/4) sandy loam
	2	17-30+ cm	dark brown (10YR3/3) sandy loam
8	1	0-20 cm	dark yellowish brown (10YR4/4) sandy loam
	2	20-22+ cm	dark brown (10YR3/3) sandy loam
9	1	0-20 cm	dark yellowish brown (10YR4/4) sandy clay
	2	20-50 cm	dark brown (10YR3/3) silty clay
	3	50-54+ cm	subsoil - yellowish brown (10YR5/4) silty clay
10	1	0-23 cm	brown (10YR4/3) silty clay
	2	23-40+ cm	dark brown (10YR3/3) silty clay
11	1	0-15 cm	brown (10YR4/3) silty clay
	2	15-17+ cm	dark brown (10YR3/3) silty clay
12	1	0-20 cm	dark brown (10YR3/3) sandy loam
	2	20-28+ cm	subsoil - dark yellowish brown (10YR4/6) clay loam
13	1	0-17 cm	dark yellowish brown (10YR4/4) silty clay
	2	17-39+ cm	dark brown (10YR3/3) silty clay
14	1	0-26 cm	brown (10YR4/3) silty clay
	2	26-40+ cm	subsoil - mottled light brownish gray and yellowish brown (10YR6/2 and 10YR5/6) sandy clay
15	1	0-38 cm	dark yellowish brown (10YR4/4) silty clay
	2	38-40+ cm	subsoil - mottled light yellowish brown and yellowish brown (10YR6/4 and 10YR5/6) sandy clay with manganese inclusions (water table at 38 cm)
16	1	0-25 cm	dark yellowish brown (10YR4/4) silty clay
	2	25-34+ cm	subsoil - mottled light brownish gray and yellowish brown (10YR6/2 and 10YR5/6) sandy clay (water table at 34 cm)
17	1	0-35 cm	dark brown (10YR3/3) silty clay loam
	2	35-37+ cm	subsoil - dark yellowish brown (10YR4/4) silty clay loam
18	1	0-30 cm	very dark grayish brown (10YR3/2) sandy loam
	2	30-37+ cm	subsoil - dark yellowish brown (10YR4/6) silty clay

Table 2. Shovel Test Results (cont'd)			
ST No.	Lev.	Depth	Soil Description
19	1	0-25 cm	very dark grayish brown (10YR3/2) sandy loam
	2	25-28+ cm	subsoil - dark yellowish brown (10YR4/6) silty clay
20	1	0-21 cm	dark brown (10YR3/3) clay loam
	2	21-22+ cm	subsoil - dark yellowish brown (10YR3/4) silty clay
21	1	0-20 cm	dark grayish brown (10YR4/2) sandy loam
	2	20-26+ cm	subsoil - yellowish brown (10YR5/4) silty clay
22	1	0-24 cm	dark brown (10YR3/3) clay loam
	2	24-26+ cm	subsoil - dark yellowish brown (10YR3/4) silty clay
23	1	0-9 cm	dark brown (10YR3/3) clay
	2	9-21+ cm	disturbed/fill - mottled brown, dark yellowish brown, pale brown and gray (10YR4/3, 10YR4/6, 10YR6/3 and 10YR6/1) silt with manganese inclusions and chert gravel from adjacent roadway
24	1	0-20 cm	disturbed/fill - mottled dark yellowish brown and light brownish gray (10YR3/4 and 10YR6/2) clay with chert gravel from adjacent roadway
	2	20-25+ cm	subsoil - yellowish brown (10YR5/6) sandy clay
25	1	0-23 cm	disturbed/fill - mottled dark yellowish brown and light brownish gray (10YR3/4 and 10YR6/2) clay with chert gravel from adjacent roadway
	2	23-25+ cm	dark yellowish brown (10YR4/6) clay
26	1	0-3 cm	humic zone - dark brown (10YR3/3) sand with chert gravel from adjacent roadway
	2	3-20+ cm	subsoil - mottled yellowish brown and light brownish gray (10YR5/6 and 10YR6/2) sand
27	1	0-10 cm+	disturbed/fill - strong brown (7.5YR5/6) clay with chert gravel from adjacent roadway
28	1	0-10+ cm	disturbed/fill - strong brown (7.5YR5/6) clay with chert gravel from adjacent roadway
29	1	0-3 cm	humic zone - dark brown (10YR3/3) sandy loam
	2	3-30 cm	brown (10YR4/4) sandy loam
	3	30-37+ cm	subsoil - mottled light brownish gray and dark yellowish brown (10YR6/2 and 10YR3/4) compact sandy loam
30	1	0-25 cm	brown (10YR4/4) sandy loam
	2	25-28+ cm	brown (10YR4/3) sandy loam
31	1	0-7 cm	very dark grayish brown (10YR3/2) silt
	2	7-20 cm	brown (10YR4/3) silty clay
	3	20-28+ cm	subsoil - dark yellowish brown (10YR4/4) silty clay
32	1	0-30+ cm	brown (10YR4/3) silty clay (water table at 15 cm)
33	1	0-20 cm	brown (10YR4/4) sandy clay
	2	20-39 cm	dark brown (10YR3/3) sandy loam
	3	39-47+ cm	subsoil - yellowish brown (10YR5/4) sandy clay (water table at 39 cm)
34	1	0-17 cm	brown (10YR5/3) sandy loam
	2	17-20+cm	subsoil - yellowish brown (10YR5/4) clay loam
35	1	0-16 cm	brown (10YR4/4) silty clay
	2	16-18+ cm	subsoil - grayish brown (10YR5/2) compact silt
36	1	0-16+ cm	subsoil - mottled yellowish brown and light brownish gray (10YR5/4 and 10YR6/2)
37	1	0-17 cm	brown (10YR4/4) silty clay
	2	17-32+ cm	subsoil - mottled brown (10YR4/4 and 10YR5/3) compact silty clay
38	1	0-21 cm	brown (10YR4/4) silty clay
	2	21-23+ cm	subsoil - mottled brown (10YR4/4 and 10YR5/3) compact silty clay

Table 2. Shovel Test Results (cont'd)			
ST No.	Lev.	Depth	Soil Description
39	1	0-22 cm	dark yellowish brown (10YR4/6) sand
	2	22-34 cm	mottled dark yellowish brown and pale brown (10YR4/6 and 2.5Y6/3) sand
	3	34-36+ cm	subsoil - pale brown (2.5Y6/3) sand
40	1	0-5 cm	humic zone - dark brown (10YR3/3) sandy clay
	2	5-22 cm	brown (10YR4/4) sandy clay
	3	22-30+ cm	subsoil - strong brown (7.5YR4/6) silty clay

Figure 12. Shovel Test 6; Illustrating Watertable at 38 cm Below Ground Surface

Figure 13. Shovel Test 2; Illustrating Disturbed Soils Encountered along Outfall Ditch

CONCLUSIONS AND RECOMMENDATIONS

No cultural resources were identified within the APE as a result of this Phase I investigation and it is considered very unlikely that any exist. Based on results of the investigation Site 22GR504 does not extend into the APE. The APE is subjected to frequent flooding and standing water was present in most areas at the time of the investigation. In addition, portions of the APE have been subjected to borrowing and filling operations associated with the water treatment facility and railroad construction. It is therefore determined that the proposed installation of the permeable reactive barrier (PRB) and associated facilities within the APE will not adversely affect cultural resources; NRHP eligible or otherwise. No further investigations are warranted.

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